

In the claims:

Amend the claims as follows:

1. A starter generator for an internal combustion engine [having], comprising a rotor and a stator[, whose] each composed of structural elements [substantially comprise], the structural elements comprising layered and joined together metal sheets which are stacked on one another so that the structural elements of the rotor and the stator are at least maximally preshaped, the metal sheets of the structural elements of the stator having a suitable geometry for creating the structural elements of the stator directly, the rotor having a base body which contains all essential structural elements of the rotor each comprising the metal sheets.

2. The starter generator of claim 1, wherein the structural elements of the rotor (14)[, individually or combined,] include a hub, a bearing seat (16), and a sensor ring for detecting rpm and/or the direction of rotation.

3. The starter generator of claim 1, wherein the structural elements of the stator (12)[, individually or combined,] include a pin bore (24), [a bore pattern], a plurality of bores and a cooling system (27).

4. The starter generator of claim 1, wherein a part of [the] a first cooling system (24) is formed by recesses (26) on the outer edge of the stator (12), and the recesses (26) serve to receive cooling tubes.

5. The starter generator of claim 3, wherein [the] a second cooling system (27) is accommodated in the interior of the stator (12) (internal cooling).

6. The starter generator of claim 3, wherein [the] a second cooling system (27) is accommodated on the outer edge of the stator (12), and an outer jack face (34) of the cooling system (27) is formed by a wall (38) of [a gear ball (external cooling)] an element which receives the stator.

[21]22. The starter generator as defined in claim 1, wherein the cooling tubes (28) have a knurling on their tube surface.

[22]23. The starter generator as defined in claim 1, wherein the cooling tubes (28) are placed in the recesses (26) of the stator (12) and then widened by a mandrel.

Amended claims:

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cont.*

1. A starter generator for an internal combustion engine, comprising a rotor and a stator each composed of structural elements, the structural elements comprising layered and joined together metal sheets which are stacked on one another so that the structural elements of the rotor and said stator are at least maximally preshaped, the metal sheets of the structural elements of the stator having a suitable geometry for creating the structural elements of the stator directly, the rotor having a base body which contains all essential structural elements of the rotor each comprising the metal sheets.

2. The starter generator of claim 1, wherein the structural elements of the rotor (14) include a hub, a bearing seat (16), and a sensor ring for detecting rpm and/or the direction of rotation.

3. The starter generator of claim 1, wherein the structural elements of the stator (12) include a pin bore (24), a plurality of bores, and a cooling system (27).

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4. The starter generator of claim 1, wherein a part of a first cooling system (24) is formed by recesses (26) on the outer edge of the stator (12), and the recesses (26) serve to receive cooling tubes.

5. The starter generator of claim 3, wherein a second cooling system (27) is accommodated in the interior of the stator (12) (internal cooling).

6. The starter generator of claim 3, wherein a second cooling system (27) is accommodated on the outer edge of the stator (12), and an outer jack face (34) of the cooling system (27) is formed by a wall (38) of an element which receives the stator.

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22. The starter generator as defined in claim 1, wherein the cooling tubes (28) have a knurling on their tube surface.

23. The starter generator as defined in claim 1, wherein the cooling tubes (28) are placed in the recesses (26) of the stator (12) and then widened by a mandrel.

REMARKS

The last Office Action has been carefully considered.

It is noted that claims 1, 3, 5 and 19 are rejected under 35 U.S.C. 102(b) over the patent to Watanabe, et al.

Claim 2 is rejected under 35 U.S.C. 103(a) over the patent to Watanabe in view of the patent to Takano.

Claims 6-8 are rejected under 35 U.S.C. 103(a) over the patent to Watanabe in view of the patent to Oda.

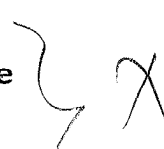
Claims 4, 20, 21 and 22 are rejected under 35 U.S.C. 103(a) over the patent to Watanabe in view of the patent to Fakult.

Also, the drawings are objected to and the claims are rejected under 35 U.S.C. 112.

In connection with the formal objections and rejections, applicants wish to make the following remarks.

Applicants have submitted Figures 1, 2 and 3 for clarification of the issues raised by the Examiner. The cross-sections in Figure 2 show the layered construction of the rotor. The sensor ring is also shown. Two versions of Figure 2 are enclosed showing the rotor from two different angles.

In connection with the Examiner's question with respect to claim 3, it is respectfully submitted that the bore pattern in claim 3 is a part of the starter and it does not serve to hold the rotor. There are several pin bores which create a bore pattern. Claim 3 has been amended to define a plurality of bores instead of a bore pattern.

Figure 3 shows knurling over a small area. If necessary, the knurling can be drawn in over the entirety of the cooling tube 28. 

It is believed that the submitted drawings and the above mentioned explanations clarify some issues raised by the Examiner.

In connection with, further issues raised by the Examiner with respect to the claims, the claims have been amended in compliance with the Examiner's requirement.

With respect to the question related to the cooling system, in the present invention there are more than one cooling system. According to claim 4 and Figure 3, there is a first cooling system, comprising cooling tubes which are arranged in recesses 26 on the outer edge of the stator 12. According to claim 5 and Figures 4 and 5, there is also a second cooling system which can be formed as an internal system defined in claim 5 or an external system defined in claim 6. The first and second cooling systems can be used alternatingly or in combination as disclosed in the specification. The claims have been amended to define a first cooling system and a second cooling system.

After carefully considering the Examiner's grounds for the rejection of the claims over the art, applicants have amended claim 1, the broadest claim on file, so as to more clearly define the present invention and distinguish it from the references.

Claim 1 now more clearly defines that the rotor and the stator are each composed of structural elements comprising layered and joined-together metal sheets. This claim also defines that the individual sheets are stacked on one another in such a way that the essential structural elements of the two components are at least maximally preshaped. This is disclosed

in lines 12-16 on page 2 of the specification. Claim 1 further defines that with a suitable geometry of the metal sheets that form a stator after being joined structural elements can be created directly, as explained in lines 24-27 on page 2 of the specification. Finally, it is also stated that the rotor has a base body which already contains all the essential structural elements of the rotor, as explained in lines 18-20 on page 4 of the specification.

Turning now to the references and in particular to the patent to Watanabe, it can be seen that this patent does not disclose a generator with the features defined now in the amended claim 1. In particular, it does not disclose a generator whose structural elements substantially comprise layered and joined-together metal sheets.

In accordance with the present invention the generator is designed so that the formation of the main structural elements in one single production step is possible. The patent to Watanabe discloses a construction which does not include the above listed new features of the present invention as defined in the amended claim 1.

The advantages of the present invention is that a generator can be produced in a specially simple, economic production on the one hand,

and has a reduced weight installation space that is easy to adapt to custom requirements on the other hand, as explained in the specification on page 2 in lines 2-4. Moreover, the generator designed in accordance with the present invention has an enhanced recycling capacity, and cooling can be done with an especially favorable heat transfer as disclosed on page 6, lines 7-12 of the specification.

The other references which were applied by the Examiner in combination with the patent to Watanabe also do not teach the new features of the present invention which are now defined in the amended claim 1.

It is therefore believed to be clear that the present invention as defined in the amended claim 1 is not disclosed in the references and can not be derived from them as a matter of obviousness. In order to arrive at the applicant's invention from the teachings of the references, the references have to be fundamentally modified by including in them the features which are now proposed in claim 1 as amended. However, it is known that in order to arrive at a claimed invention, by modifying the references the cited art must itself contain a suggestion for such a modification.

This principle has also been consistently upheld by the U.S. Court of Customs and Patent Appeals which, for example, held in its decision in re Randol and Redford (165 USPQ 586) that

Prior patents are references only for what they clearly disclose or suggestion; it is not a proper use of a patent as a reference to modify its structure to one which prior art references do not suggest.

Definitely, the references do not contain any hint or suggestion for such significant modifications.

Also, as explained herein above, the present invention provides for the highly advantageous results which can not be accomplished by the constructions disclosed in the references. It is well known that in order to support a valid rejection the art must also suggest that it would accomplish applicant's results. This was stated by the Patent Office Board of Appeals, in the case Ex parte Tanaka, Marushima and Takahashi (174 USPQ 38), as follows:

Claims are not rejected on the ground that it would be obvious to one of ordinary skill in the art to rewire prior art devices in order to accomplish applicants' result, since there is no suggestion in prior art that such a result could be accomplished by so modifying prior art devices.

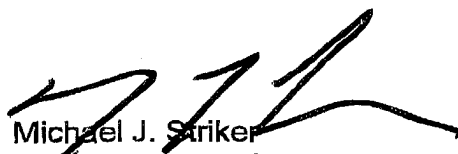
In view of the above presented remarks and amendments, it is believed that claim 1, the broadest claim on file, should be considered as patentably distinguishing over the art and should be allowed.

As for the dependent claims, these claims depend on claim 1, they share its presumably allowable features, and therefore it is respectfully submitted that they should be allowed as well.

Reconsideration and allowance of present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be carried out by Examiner's Amendment, and the case be passed to issue. Any costs involved should be charged to the deposit account of the undersigned (No. 19-4675). Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 631-549-4700).

Respectfully submitted,



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